

FROM RUNWAYS TO REVENUE: ECONOMIC BENEFITS OF YOUR LOCAL AIRPORT

BY GOLDEN SHOVEL AGENCY



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DEAR ECONOMIC DEVELOPERS & COMMUNITY LEADERS,

I am delighted to share with you this comprehensive whitepaper, which sheds light on the often-overlooked economic potential of general aviation airports in the United States, particularly in rural areas. As an aviator, flight instructor, and community leader, I have witnessed first-hand the significant impact that airports can have on local economies. Unfortunately, I have also seen many communities neglect their airports, missing out on the tremendous benefits that local aviation can provide.

In my travels, I have landed at numerous airports and always look forward to exploring the nearby towns, meeting the residents, and experiencing the local culture. Yet, too often, I find that communities lack the necessary accommodations for travelers, prompting me to leave without truly engaging with the area - that's a missed opportunity for local communities!

As an ardent aviation enthusiast, it saddens me to encounter quiet or neglected airports. This has driven me to a personal mission: to elevate the potential of airports to every community leader and elected official.

In this whitepaper, you will discover research that challenges common misconceptions about the functionality and utility of airports. My goal is to emphasize the untapped opportunities by further developing your community's airport and aviation culture. Left unattended, an airport is merely a place, but when nurtured, it can become a pivotal asset in local and regional economic development plans.

This whitepaper provides practical strategies for engaging local aviators, business owners, airport managers, and commissioners. By leveraging the unique advantages of rural airports, we can spark economic growth, create jobs, and enhance the quality of life in our communities.

I hope this whitepaper inspires you to see the potential in your local airports and take action to transform them into vibrant hubs of economic activity. It should serve as a resource, inspiring and guiding your efforts to harness the aviation boom we are experiencing. Together, we can pave the way for prosperous and resilient communities.

May fair weather and sunny skies guide you on this adventure.

Best,



Ron Kresha • Golden Shovel Agency, CFO • Flight Instructor, and Cirrus Standard Instructor Pilot (CSIP)



ABOUT THE AUTHOR

Ron received his private pilot's license at 20 and pursued aviation in college, hoping to fly for the airlines. However, marriage, family, and life presented a different path: teaching high school English in rural Minnesota.

After teaching for 12 years, Ron formed an online learning company with 10 other partners. Growing a business in rural Minnesota demonstrated the potential of rural economies. By leveraging the strength of the rural workforce and broadband access, he was able to pioneer an online company successfully.

This business experience led Ron to co-found Golden Shovel Agency, which helps communities tell their stories and build awareness. He is profoundly dedicated to rural communities and the economic possibilities of a rural resurgence.

As a pilot and economic development enthusiast, writing this research whitepaper was a natural extension of all Ron's passions. Because of his travels to communities through aviation, he understands the untapped potential of the community airport.

Ron Kresha, CFO and founding member of Golden Shovel Agency, is dedicated to equipping communities with the tools needed for economic success. A serial entrepreneur proud of his resilience, Ron manages financial operations, analyzes economic trends, and drives unique projects. He thrives on connecting with people and understanding community challenges. Based in Little Falls, MN, Ron enjoys crafting wooden games and piloting aircraft in his free time. He values the opportunity to support community leaders and contribute to their success stories.



INTRODUCTION

Aviation captivates our imaginations with thrilling stories and dramatic portrayals in the media. For many, this fascination began with television shows like *Black Sheep Squadron*, where the daring missions of US Major Gregory “Pappy” Boyington and his squadron brought us into the cockpit of Corsairs flying over the Pacific Ocean. These WWII stories came to life in our living rooms, but the local airport always seemed distant and unreachable.

In many towns, the sound of planes arriving and departing is familiar, and the airport beacon flashes at night. Yet, the idea of becoming a pilot feels out of reach, and few consider visiting the airport. The flying men and women appear poised, professional, and remarkably cool. However, for many young people without aviation connections, entering the aviation industry seems like an insurmountable challenge.

Today, advancements in technology, education, and the need for a skilled workforce have removed these obstacles. The aviation industry is booming with opportunities for economic growth and workforce development. Every job in aviation needs quality people who offer competitive wages and benefits. Now is the time for communities to rethink their relationship with local airports and the aviation industry.

BRIDGING THE GAP

The goal of this whitepaper is clear: to dismantle the myths surrounding airports and aviation, help communities leverage their airports, and welcome new talent into the industry. Airport culture is vibrant and engaging. Instructors, students, and general aviation pilots often share stories and discuss weather forecasts, cross-country flights, upcoming pancake fly-ins, airplane maintenance, and restoration projects in the airport lobby. But beyond these conversations lies a powerful economic engine. Aviators earn a living and frequently spend money in the aviation sector, fueling the community with transportation options, small businesses, potential investments, and economic growth.



INTRODUCTION

COMMUNITY ENGAGEMENT & MISCONCEPTIONS

Airport activities and their economic impact remain largely unknown in many communities. In areas without regional or commercial airline services, residents seldom, if ever, visit their local airports. Community engagement with these airports is typically restricted to special events such as airplane rides or fly-in activities. While these occasions provide a snapshot of airport operations, they barely scratch the surface of the airport's full potential as a valuable community asset. When an airport is only known for "airplane rides," the true depth of the aviation economy can be overlooked. A more in-depth exploration and understanding of local airport activities will unveil significant opportunities for community development and economic growth.

Throughout this whitepaper, we will examine the airport regulation system, funding sources, and how to find economic opportunities in the multifaceted aviation industry. The aviation community needs champions, and community leaders must keep finding new economic development strategies. This whitepaper's recommendations will surely get you moving in the right direction.



ECONOMIC IMPACT

ECONOMIC IMPACT OF GENERAL AVIATION

The airport in your community provides valuable services that are often overlooked. In addition to providing a runway, fuel, and a building, airports can be a hub of economic activity. It is an economic asset with the potential to produce revenue and services for the community. General aviation significantly contributes to the US economy, generating over \$150 billion annually and supporting approximately 8 million jobs. Nationally, civil aviation accounts for 5% of the GDP, with contributions reaching up to 19% at the state level. Remarkably, over 90% of the 220,000 aircraft registered in the United States fall under civilian or general aviation categories. Yet, despite the apparent economic value, the potential of general aviation remains under-recognized in many local communities.



\$150B
Generated Annually
to the U.S. Economy

8M
Jobs Supported
Annually

5%
of the National GDP
(19% at the state level)

90%
of Registered Aircraft Registered
Under Civilian or General

MULTIFACETED SERVICES & ECONOMIC OPPORTUNITIES

Cities like Gallup, NM, understand that local air travel is critical to their economic health. Without access to the national air transportation system, the community would be cut off from travel and the supply chain. Gallup makes the case for its local airport on its website:

"Direct service to a medium or large airline hub can provide one-stop access to hundreds of additional destinations around the globe. As our economy grows and smaller communities struggle to compete in the global marketplace, airports have become a vital link to survival."

In some instances, the connectivity provided by local airports is necessary for business attraction and retention. The [Cleveland Regional Jetport in Tennessee](#) is the perfect example. Built in 2013, its 6,200-foot runway and 8,000-square-foot terminal building is heavily utilized by corporate executives from companies like Coca-Cola, [Whirlpool, and Amazon](#).



ECONOMIC IMPACT

MEDICAL COMPANIES CAN BE BASED AT THE AIRPORT

Beyond providing connectivity, an airport's economic impact increases as the activity at the airport diversifies. For example, airports can offer communities a variety of business services, including transportation, medical, surveying, flight instruction, aircraft maintenance, recreation, humanitarian missions, agricultural services, and more. For example, the South Alabama Regional Airport Authority expanded airport business activity by leasing space to Medical Air Rescue Company. [Medical Air Rescue Company](#) is based in Rapid City, South Dakota, and it provides a complete air ambulance transportation process that is like that of a flying intensive care unit. The company's presence at the airport increases its overall economic impact while creating awareness of what's possible at the site.

AGRICULTURE AVIATION IS A LONGSTANDING ECONOMIC DRIVER

Agriculture aviation, or "ag aviation," is crucial in modern agriculture and pest control in the United States. This specialized industry utilizes aircraft to apply pesticides, fertilizers, and seeds to agricultural fields. The National Agricultural Aviation Association reports that there are approximately 1,560 aerial application businesses and around 3,400 ag pilots in the U.S. Recently, unmanned aerial vehicles (UAVs) or drones have become increasingly prominent in agriculture aviation, offering innovative solutions that complement traditional methods. These drones provide a cost-effective, efficient, and environmentally friendly crop management and monitoring approach.

A recent FAA ruling has paved the way for the use of drone swarms in agricultural spraying, offering significant cost savings for agricultural businesses. Drones provide precise application on crops, reducing soil compaction, fuel costs, and maintenance compared to traditional tractors. This technological advancement marks a significant leap forward in the efficiency and precision of agricultural aviation.

¹ "The Economic Impact Of A Local Air Service." *Greater Gallup Economic Development Corporation*.

ECONOMIC IMPACT

PRIVATE CHARTER SERVICES ARE REDEFINING AIR TRAVEL

In many airports, private charter services offer a personalized and flexible alternative to commercial airline travel. These services cater primarily to business travelers, high-net-worth individuals, and groups seeking convenience, privacy, and efficiency. Private charters provide tailored, efficient travel options that meet a wide range of needs and preferences. With ongoing technological innovations and a growing focus on sustainability and accessibility, private charters are evolving. They present a viable alternative to commercial air travel for those willing to pay a premium for the benefits of privacy, convenience, and personalized service.

General aviation, driven by passion and community, encompasses a broad spectrum of activities from recreational flying to critical agricultural applications. The sector thrives on the enthusiasm of individuals and the support of flight schools that nurture new aviators. Innovations in technology, particularly in agriculture aviation and private charters, continue to push the boundaries of what's possible, ensuring that general aviation remains a dynamic and integral part of the aviation landscape.



ECONOMIC IMPACT

AIRPORTS CREATE ECONOMIC OPPORTUNITIES AT ALL LEVELS OF THE COMMUNITY

The perception that aviation exists only for wealthy individuals simply does not reflect the reality in today's aviation industry. In a 2019 article, Adele Berti argues that airports can contribute to poverty reduction for communities because success in aviation comes from passion and hard work instead of economic status. Aviation positively impacts communities of all sizes and provides jobs and opportunities to anyone willing to learn, train, and pursue an aviation career. This access allows individuals the ability to move up the economic ladder and reduces community poverty through job creation and community investments.

Contrary to popular belief, the airport does not need to be large to create jobs and have a positive economic impact. For example, most people have never heard of Maryland's Lee Airport. With a 2,500-foot runway, this small, local airport is primarily used by two flight schools and by aviation enthusiasts who fly as a hobby. Yet, 41 people are employed at the airport, and it's a hub of activity for people seeking their pilot's license. [Statewide](#), if you eliminate the economic impact of Maryland's only large commercial airport, BWI, there are still 9,929 jobs and \$1.1 billion in economic activity created by the state's airports. Small airports make a significant contribution to local economies.

Community leaders should embrace every opportunity to create economic advantages to bolster organic growth and business development. This economic advantage can be found at the local airport.



AIRPORT CASE STUDIES & SUCCESS STORIES

MASON CITY MUNICIPAL AIRPORT'S COMMUNITY ENGAGEMENT AND ECONOMIC IMPACT

Mason City Municipal Airport in Mason City, IA, serves as a vital transportation hub for the town of 27,000 residents. The airport is a significant asset for the local economy, with commercial air service connecting to major airport hubs and an active flight school. [The airport generates \\$14 million in economic activity](#) and serves over 15,000 passengers annually.

Thanks to a dedicated community of local aviators, its impact extends beyond traditional flight services.

Community Engagement: The airport is home to a passionate group of pilots who have taken their love for aviation to the next level. They have established a monthly event called the "3rd Thursday Burger Burn," which takes place on the third Thursday of each month. This event is not just for aviators but is open to the entire community.

According to their Facebook page, the event is described as follows: "3rd Thursday Burger Burn happens year-round on the 3rd Thursday of each month. Bring something to throw on the grill, what you want to drink, and a dish to share. We start the grill at 6 p.m. Fly in or drive in – everyone is welcome!"

Economic Impact: The "3rd Thursday Burger Burn" has successfully bridged the gap between aviation enthusiasts and the local community. Pilots from across the country fly in to attend this event, bringing visitors to Mason City and boosting the local economy. These visitors contribute to the town's economy by patronizing local businesses, restaurants, and hotels.

It's Replicable: Mason City Municipal Airport's "3rd Thursday Burger Burn" is an exemplary model of how airports can engage the local community and drive economic growth. By leveraging the passion of local aviators, the airport has created a recurring event that attracts visitors from near and far, enhancing the town's visibility and economic vitality. This case study highlights the importance of connecting aviation enthusiasts with local economic development efforts to unlock the full potential of regional airports.

² <https://www.airport-technology.com/features/importance-of-airports-to-a-country/>

AIRPORT CASE STUDIES & SUCCESS STORIES

STRATEGIC GROWTH AND MANAGEMENT AT DUPAGE COUNTY AIRPORT

[DuPage County Airport \(DPA\) in Chicago](#) serves as a prime example of strategic growth and effective management within the aviation industry. Originally a simple grass runway developed in the 1920s, DPA has evolved into one of the busiest general aviation facilities in the United States, with a [\\$1.5 billion economic impact](#). With a 24-hour FAA control tower, it functions as a key reliever for O'Hare and Midway airports. This transformation into a model regional airport was acknowledged by U.S. Secretary of Transportation Ray LaHood during his visit in June 2011.

Financial Success: DPA's strategic adoption of business principles has led to substantial financial success. The airport has managed to pay off debts, significantly reduce public subsidies, and generate an impressive annual profit of approximately \$2 million. These financial achievements highlight its management approach's effectiveness and ability to operate as a self-sustaining entity.

Innovative Land Use and Community Integration: DPA's journey involved strategic expansions and contractions in response to economic fluctuations, coupled with innovative land use and community integration. A pivotal move in the 1980s was the establishment of an airport authority to protect the airport from urban encroachment. Today, the airport spans over 2,800 acres, including a revenue-generating golf course and industrial park. These developments serve dual purposes: providing stormwater drainage and acting as a buffer between the airport and the surrounding community.

Economic Impact: The airport is home to approximately 390 aircraft and 50 businesses, including flight schools and clubs. It plays a crucial role in supporting major corporations such as Sears and McDonald's. This diverse economic activity underscores DPA's significance as a hub for both aviation and business.

It's Replicable: DuPage County Airport's strategic growth, innovative management, and successful financial model exemplify how regional airports can evolve into significant economic assets. Communities with a regional airport should consider how they can support major airports by relieving traffic congestion in areas like freight.

AIRPORT CASE STUDIES & SUCCESS STORIES

THE CREATIVE REPURPOSING OF RURAL AIRPORTS AMID DECLINE

The [closure of the airstrip in Onawa, Iowa](#), after 60 years of operation, highlights a concerning trend affecting small-town airports across the United States. Driven by a significant decline in the number of private pilots, particularly in rural areas, many small cities are repurposing their airfields to adapt to changing economic realities.

The Decline of Private Pilots: The number of private pilots has drastically decreased, with private certificate holders falling from 357,000 in 1980 to 188,000. This national trend has led to the closure of hundreds of local airfields. Several factors contribute to this decline, including the steep increase in the costs of owning and operating small aircraft and rising expenses for aviation fuel, insurance, maintenance, and hangar space.

Onawa, Iowa: A Case in Point: Onawa's decision to close its 3,400-foot-long runway and repurpose it for racing dragsters reflects the broader challenges faced by rural airports. Once a bustling airstrip, the dwindling aviation activity made it necessary to find alternative uses for the land. This trend is seen in other small communities, such as Hartley, Iowa, where an airfield was repurposed for agriculture, and Hillsboro, Illinois, where an airfield was converted for coal mining.

Economic and Community Impact: The decline of small-town airfields contrasts with the growing passenger traffic in commercial aviation. While larger airports are seeing an increased passenger count, fewer people are flying out of rural community airfields. As a result, many rural airfields have become underused, losing activities that once brought communities together, like flying clubs and family gatherings.

In places like Martin Field in South Sioux City, Nebraska, the decrease in interest and economic viability is evident, with fewer flight instructors and student pilots. This trend affects local pilots, who now face longer distances to house their aircraft, and represents a loss of a unique aspect of community life.

Resilience and Hope: Despite these challenges, some airfield owners resist selling their land for development, hoping to preserve the legacy of aviation. For instance, Gene Martin of Martin Field continues to hold onto his airfield despite economic pressures, hoping to maintain its historical significance. At the state level, there is support for these local airports. In a report titled, "[Nebraska Aviation Counts!](#)" Martin Field was listed as having a \$1.9 million economic impact in recognition of these and other small airports' benefits on Nebraska's economy.

AIRPORT CASE STUDIES & SUCCESS STORIES

Don't Let This Happen to You: The closure and repurposing of small-town airfields like Onawa's underscore the need for rural communities to be creative in the face of declining aviation activity. While the trend reflects broader economic and societal shifts, it also highlights the resilience of communities finding new ways to utilize their resources. This case study serves as a reminder of the importance of adaptability and innovation in sustaining rural economies and preserving the legacy of aviation.



AIRPORT ORGANIZATION AND FUNDING

Community leaders interested in aviation need a basic understanding of how airports are organized, managed, regulated, and funded. This section serves as a primer with more information available through the [Federal Aviation Administration](#) and [open-source college libraries](#).

MANAGEMENT CHALLENGES & OPPORTUNITIES

Airports can be managed privately or publicly. Our research suggests that publicly managed airports compete for resources with local attractions, and if there is not strong advocacy by the elected officials, the airport's priorities can be minimized. Research suggests a lackadaisical approach to airport oversight and management can lead to under-performance.

The University of Florida estimates that 54% of the 5,000 publicly owned airports in the United States underperform due to mismanagement. This below-standard performance results in missed economic opportunities for these communities. The aviation industry is experiencing tremendous growth, and there are enormous opportunities for community airports to create jobs, attract businesses, and bring young people into the aviation industry with proper airport management.

54%
OF THE
5000

**PUBLICLY OWNED
AIRPORTS IN THE
UNITED STATES
UNDERPERFORM DUE
TO MISMANAGEMENT**

WHAT CAUSES MISMANAGEMENT?

According to aviation consultant Michael Jones, many airports suffer mismanagement by local government officials. Government agencies may attempt to operate airports as other public services, such as post offices or utilities. This creates an oversight structure where city councils or county commissioners manage the local airport with a limited understanding of how to create a thriving, successful airport. For many communities, airport management is primarily about maintaining operations and complying with the Federal Aviation Administration (FAA) regulations. As a result, the focus is on keeping the runways open, offering limited hangar space, and providing fuel. If the airport beacon is rotating, the airport is deemed to be operating.

There will always be an ongoing debate on whether airports should be private, for-profit entities, or publicly run facilities. Both can be effective if the management has appropriate knowledge and experience and support from community leadership.

³ Jones, Michael. "GA Airports Suffer from Costly Mismanagement." *Air Facts Journal*

AIRPORT ORGANIZATION AND FUNDING

UNDERSTANDING AIRPORT REGULATORY STRUCTURE & FEDERAL FUNDING MECHANISMS

The US airport system connects communities and transports people and goods. This critical transportation system provides a competitive advantage internationally and helps fuel our nation's economy. In rural areas of the county, the national airport system provides critical access.

In 1946, the first National Airport Plan created the guiding principles for Federal involvement in the national airport system. US airports operate within the National Plan of Integrated Airport Systems (NPIAS) framework.

NPIAS airports are categorized into two groups: primary and nonprimary airports. Primary airports receive scheduled air carrier service and have 10,000 or more enplaned passengers per year. The 383 primary airports are classified as large, medium, small, and non-hubs.

According to the FAA, 99 percent of passenger enplanements and 32 percent of aircraft operations occur at primary airports.

Part 139 of the CFR applies to airports that serve passengers. The FAA website provides the following directions for airports serving air carriers. *Specifically, Part 139 applies to operators of airports in any State of the United States, the District of Columbia, or any territory or possession of the United States serving passenger-carrying operations of an air carrier certificated under 14 CFR Part 121 and 14 CFR Part 380 if*

- *Scheduled passenger-carrying operations are conducted in aircraft designed for more than 9 passenger seats*
- *Unscheduled passenger-carrying operations are conducted in aircraft designed for at least 31 passenger seats.*



Over 720,000 pilots, 6,000 commercial aircraft, and 205,000 general aviation aircraft operate in over 20,000 landing areas in the United States. According to the FAA, this includes approximately 15,000 private-use and 5,000 public-use airports, heliports, and seaplane bases.

AIRPORT ORGANIZATION AND FUNDING

THERE ARE FEWER RULES FOR GENERAL AVIATION AIRPORTS

General aviation airports are civilian airfields that don't provide scheduled passenger services. These airports mainly cater to private planes and charter services for small aircraft.

The rules under Part 139 generally don't apply to these general aviation airports. This is because they aren't involved in the types of air carrier operations outlined in the authorizing statute and the updated regulation, which include scheduled and unscheduled operations of air carrier aircraft with over 30 seats and scheduled operations of air carrier aircraft with 10 to 30 seats. Nonetheless, if an airport anticipates such operations, it's advised to contact the Regional Airports Division Office to discuss the certification process with an Airport Certification Safety Inspector.

Even for airports that aren't mandated to have an Airport Operating Certificate, the FAA recommends numerous safety procedures and practices that benefit all airports.

⁴ Secretary Of Transportation. National Plan of Integrated Airport Systems (NPIAS) 2023-2027. US Federal Airport Plan. 30 September 2022.

⁵ Secretary Of Transportation. National Plan of Integrated Airport Systems (NPIAS) 2023-2027. US Federal Airport Plan. 30 September 2022.



AIRPORT ORGANIZATION AND FUNDING

THE AIRPORT COMPLIANCE PROGRAM

The FAA ensures airport owners comply with these obligations through its Airport Compliance Program.

The FAA's Airport Compliance Program ensures that airport sponsors adhere to Federal obligations when accepting Federal grants or property for airport use. This program safeguards public interest in civil aviation and enforces compliance with Federal laws, FAA rules, and policies.

Obligations arise when airport owners or sponsors receive Federal assistance, typically through grant agreements (Grant Assurances), property transfer instruments, or deeds of conveyance. Accepting Federal grants commits them to maintaining and operating their facilities safely and efficiently, abiding by specific conditions and assurances. These obligations vary across different airport development grant programs, such as the FAAP, ADAP, and AIP.

Key obligations include prohibiting exclusive rights, ensuring proper use of airport revenue, maintaining and operating facilities effectively, protecting approaches, maintaining good title of airport property, ensuring compatible land use, offering fair and reasonable terms without discrimination, adhering to approved airport layout plans, achieving self-sustainability, regulating the sale or disposal of Federally acquired property, preserving rights and powers, using appropriate accounting and record-keeping systems, and complying with civil rights requirements.

The FAA advises airport owners to thoroughly review each agreement and document to understand their obligations. Good record-keeping and annual agreement reviews are crucial for maintaining compliance with Federal obligations.

For detailed information, visit the FAA website at https://www.faa.gov/airports/airport_compliance/overview.



**Federal Aviation
Administration**



AIRPORT ORGANIZATION AND FUNDING

AIRPORT FUNDING

FEDERAL FUNDING FOR AIRPORTS

Part 49 of the US Code of Federal Regulations requires this plan to identify the amounts and types of airport development eligible for Federal funding under the Airport Improvement Plan (AIP) and Bipartisan Infrastructure Law (BIL). ***Understanding the application process and timelines is critical for communities wishing to expand or renovate their current airport.***

Forecasted traffic, the use and age of facilities, and changing technology determine an airport's capital needs. Federal funding covers many of these needs, but supplemental funding sources also provide options for local airports. In addition to the AIM and BIL funds, airports can tap into Passenger Facility Charges (PFC), state and local grants or bonds, airport revenue, municipal financing, or local tax revenue.

Federal funding in the form of grants contributes to about 10 percent of funding for the nation's largest airports. These airports generally have a local revenue stream with fees and taxes. For the roughly 3,200 other airports in the national airport system, funding comes from a variety of sources, including the National Plan of Integrated Airport Systems (NPIAS), Airport Improvement Program (AIP), state governments, local general fund allocations, tax-exempt bonds or borrowing for major capital projects.

FUNDING PRIORITIES

The current published NPIAS has adopted six strategic goals from the FAA and DOT. The six focus areas are safety, capacity, environmental performance, runway pavement conditions, surface transportation accessibility, and airport financial performance. Economic developers and community leaders should understand each of these areas and how the airport can be improved in one or more of them. Matching funding requests to these focus areas will improve the chances of success.

The National Plan of Integrated Airport Systems (NPIAS) for FY 2023-2027, mandated by 49 U.S.C. § 47103, outlines the development of public-use airports in the US, including costs and types of eligible airport development. This plan encompasses various types of airports, including those for fixed-wing aircraft, helicopters, and seaplanes. It identifies the development eligible for Federal funding under the Airport Improvement Program (AIP) and the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL). The BIL introduces grants for airport terminal projects, on-airport rail access, and air traffic control towers, which traditionally received minimal AIP funding.

AIRPORT ORGANIZATION AND FUNDING

Airport capital development needs are influenced by traffic forecasts, facility usage and age, and evolving aircraft technology, necessitating updates or replacements in equipment and infrastructure. These developments are identified through the airport capital planning process and included in the NPIAS. While many projects are eligible for federal funding, they can also receive financial support from other sources like Passenger Facility Charges, state/local grants, or airport revenue.

The Airport Improvement Program (AIP) offers grants to public agencies, and in some cases to private owners and entities, for the planning and developing of public-use airports included in the National Plan of Integrated Airport Systems (NPIAS). The grant coverage varies: for large and medium primary hub airports, it's 75% of eligible costs (80% for noise program implementation), and for small primary, reliever, and general aviation airports, it's 90-95% based on statutory requirements.

The FAA categorizes airports within the NPIAS based on various data, including aviation activity, ownership, and public service functions. Commercial service airports, defined as public airports with over 2,500 enplanements per year, are updated annually, while others are updated biennially. Development cost estimates are primarily sourced from airport sponsors through local planning documents and are focused on projects eligible for federal funding. The current [NPIAS](https://www.faa.gov/airports/planning_capacity/npias/current/2023_NPIAS_narrative) (https://www.faa.gov/airports/planning_capacity/npias/current/2023_NPIAS_narrative) reflects development based on documents and information available up to March 2022.

Eligible airports for AIP grants include those that are publicly owned and privately owned but designated by the FAA as relievers, or privately owned with scheduled service and at least 2,500 annual enplanements. To qualify for a grant, an airport must be part of the NPIAS, which is updated every two years and identifies key public-use airports for public transportation, civil aviation, national defense, and the Postal service.

Grant recipients, known as "sponsors," must be capable of fulfilling the obligations and assurances in the grant agreement. Eligible projects generally relate to airport safety, capacity, security, and environmental concerns and can include airfield improvements, terminals, hangars, and certain professional services. However, operational costs and projects not meeting Federal environmental and procurement requirements are ineligible.

For specific details about eligible and ineligible projects, consult the appropriate Regional Airports Office.

GENERAL AVIATION CHALLENGES

General aviation airports represent significant economic opportunities for communities looking to attract or create new businesses. Still, this industry faces some of the same challenges advanced manufacturing faces, such as a workforce shortage and changing regulations. Community leaders need to develop plans to overcome these challenges and may benefit from incorporating the recommendations contained within this whitepaper.

Organizations like the AOPA and EAA can also provide assistance. They have strong memberships and advocate for aviation. Their voices are important as the public needs to be educated on the issues that can affect air travel, which has become an everyday convenience.

CHANGING REGULATIONS & A CALL TO ELIMINATE LEADED FUEL

Change is coming. Some airport managers are looking to the future and preparing to capitalize on electrification, while others are still grappling with how to move from leaded to unleaded aviation fuel.

For example, Pangborn Memorial Airport (EAT) in Wenatchee used a recent renovation to enhance its capacity for supporting electric-powered aircraft when completing a recent remodel. "We've built-in capabilities to accommodate electric aircraft," EAT Director Trent Moyers told [Airport Improvement](#). "If that's the future and that's the way the industry goes, we're positioned to grow with the investments we have made."

At other airports, the infrastructure for electric aircraft can't come until the move to lead-free fuel (topping the list of general aviation concerns) is complete. To understand why this is a challenge, it is important to understand the historical and ongoing developments in aviation gasoline (avgas). In the early stages, avgas development was about achieving the right octane level and ensuring low vapor points for high-altitude flight efficiency. Tetraethyl Lead (TEL) was extensively used to prevent engine detonation, but its environmental and health drawbacks led to a gradual phase-out.

Initially, multiple avgas grades were available, but the shift towards jet fuel production reduced these to primarily 100/130, later known as 100LL (low lead). ASTM International sets the standards for avgas, including 100LL, under specification ASTM D910.

The drive to eliminate lead from products started with household paint in the 1970s, with efforts now focused on aviation fuel. The Environmental Protection Agency (EPA) is considering steps to potentially make 100LL illegal, promoting the development of unleaded alternatives.

GENERAL AVIATION CHALLENGES

Despite a significant reduction in lead emissions since the mid-20th century, the complete elimination of 100LL is imminent due to both environmental concerns and market economics. The limited availability of TEL and the inefficiency of producing leaded fuel for a shrinking market have further accelerated this shift.

Several companies have been developing unleaded avgas alternatives. Hjelmcø Oil and Shell Oil have introduced lower octane grades, while Exxon Mobil, Philips 66, and Swift Fuels are actively involved in research and development. General Aviation Modifications Inc (GAMI) has gained a significant lead with its G100UL™ unleaded 100 octane avgas, receiving FAA approval and compatibility with existing aircraft and infrastructure.

GAMI's G100UL™ presents several advantages, such as compatibility with 100LL, higher power output, no need for separate storage or transportation facilities, and no engine modifications required. It also promises longer engine life and lower maintenance requirements.

The evolution of avgas is now towards mogas and unleaded 100 avgas, with ongoing challenges like sourcing ethanol-free mogas. This transition signifies a major step in aviation fuel technology, balancing environmental concerns with industry needs.

The FAA and aviation partners launched the Eliminate Aviation Gasoline Emissions (EAGLE) initiative to guide the transition away from leaded aviation fuels in piston-engine aircraft by 2030 (<https://www.faa.gov/unleaded>).



GENERAL AVIATION CHALLENGES

AVAILABLE FUEL MUST SUPPORT THE NEEDS OF PILOTS

A successful transition will identify acceptable unleaded fuel for safe use in general aviation aircraft and provide a seamless supply chain so that pilots can access the fuel.

During training to become a private pilot, there is a substantial focus on the fuel of the aircraft for safety. Additionally, all pilots know that a Supplemental Type Certificate (STC) is required to use alternate fuels from the aircraft manufacturer's intent.

Because a pilot needs to certify their aircraft for the new fuel, there needs to be access to both leaded and unleaded fuel until the general aviation fleet has received the proper STC. For example, a pilot flying cross country may need to stop for fuel. If the airport has already stopped offering the leaded fuel, and the pilot hasn't received an STC to change fuels, the pilot will not be able to legally fly with the new fuel.

All the major aviation groups are working diligently to educate their members about the aviation fuel change and suppliers are offering plans to make sure the fuel is readily available.

WHAT DOES THIS MEAN FOR YOUR LOCAL AIRPORT?

Airport management must now prepare for this transition with infrastructure and education.

The FAA and EAGLE have developed a guidance document to help flight schools with their transition. This document, intended for flight schools, offers a helpful guide for any airport manager as the transition towards unleaded fuel continues. Find the guidance document at this link: [Flight School Fuel Guidance](#).

The following documents provide guidance on this issue:

- [Airport Cooperative Research Program](#)
- [Transportation Research Board](#)
- [EAGLE White Paper](#)
- [EAGLE Stakeholder Q&A](#)
- [AOPA Frequently Asked Questions](#)

GENERAL AVIATION CHALLENGES

AVIATION LABOR SHORTAGES

Air travel connects our modern world. Thousands of flights daily deliver people and cargo to intended destinations worldwide. This complex system requires a trained workforce and robust technology and infrastructure.

The workforce shortage in the United States affects almost every industry, and aviation is not immune. Since the peak in 1980, licensed pilots have steadily declined each decade. While the pilot shortage continues to garner a lot of media coverage, the lack of mechanics and technicians is equally concerning.

A recent report from AAR Corp., a prominent provider of aviation services, highlights a critical shortage of aircraft mechanics. The 2023 Mid Skills Gap report, part of a series initiated in 2011, emphasizes the need for collaboration among employers, educational institutions, non-profits, and government officials to enhance access to aviation maintenance education and training. For example, "mid skills" careers, such as aviation mechanics, require specific industry certifications but not necessarily a college degree, so there may be faster pathways to job placement when working with community and technical colleges.

WORKFORCE SHORTAGES ARE GROWING FOR AVIATION MECHANICS & AIRCRAFT MAINTENANCE

The post-pandemic rebound continues to be nonexistent for aviation mechanics. An aging workforce contributes significantly to the shortage. With a large portion of mechanics nearing retirement, the industry faces a steep challenge in replacing them.

This problem is amplified for smaller airports in the United States. General aviation aircraft require regular inspections and maintenance to maintain airworthy status so a shortage can have significant impacts on operations.

Examining the workforce engaged in aircraft maintenance, including both licensed and unlicensed personnel, along with the projected need for maintenance and repair workers, results in a projected deficit ranging from 12,000 to 18,000 aviation maintenance employees. This gap between the available workforce and the rising demand is expected to continue and may even intensify over the coming decade. This shortage could lead to reduced flight frequencies and increased instances of delays and cancellations. Alternatively, airlines might have to adapt by maintaining a larger reserve of spare aircraft and parts.

GENERAL AVIATION CHALLENGES

("How To Overcome The Impending Shortage Of Aviation Mechanics")

Oliver Wyman forecasts a gap in North America between the supply of mechanics and demand for them of 8% to 12% in 2023, potentially growing to a deficit of over 48,000 by 2027. This shortfall is based on survey responses from airlines and MRO companies, demographic data, and fleet growth projections.

ADDRESSING THE SHORTAGE: WHAT'S POSSIBLE

Three scenarios have developed based on a collective response to the workforce shortage:

1. **Baseline:** A 2% annual increase in hiring would still leave a shortfall of over 24,000 mechanics by 2032.
2. **Best Case:** Aggressive hiring and delayed retirements could eliminate the shortage by 2029.
3. **Worst Case:** Minimal response to the shortage could result in a 45,000-mechanic deficit by 2032.

IMPACT ON THE INDUSTRY

All segments of the aviation industry will feel the impact, with independent MROs and regional airlines being the most affected. Major airlines might still struggle despite better pay and benefits.

By 2027 — projected to be the worst year for the shortage — the bleakest scenario has the supply deficit at more than 48,000 aircraft maintenance workers or a shortfall of about 27%. Our more likely scenario predicts a gap of almost 43,000, or more than 24%.

GENERAL AVIATION CHALLENGES

RECRUITMENT AND RETENTION CONSIDERATIONS

To combat the shortage, the industry must enhance recruitment and retention strategies:

- **Recruitment:** Address the dwindling pool of interested candidates by highlighting aviation as a viable career option without a college degree but with considerable training. Initiatives should start early, targeting middle and high school students. [Golden Shovel Agency develops a virtual reality industry and offers career tours](#) that have effectively recruited students into advanced manufacturing careers. This same tool could be deployed for the aviation industry.
- **Retention:** To retain current mechanics, improve pay and work conditions, offer clear career pathways, and modernize work environments.

PAY AND WORK CONDITIONS

Mechanics' salaries, while above the national average, must be competitive to attract new talent. The industry must also address the lack of flexibility and harsh work environments that deter younger workers.

DIVERSITY

Increasing the number of women and minorities in the field can expand the candidate pool. Currently, women and minorities are underrepresented in the aviation maintenance workforce.

MODERNIZING TRAINING

Improving training programs to include more modern technologies and reducing the time required for certification can help attract new talent. The FAA has started this process, but further changes are needed.

GENERAL AVIATION CHALLENGES

TECHNOLOGICAL INTEGRATION

Incorporating cutting-edge technologies like AI, AR/VR, and drones into training and operations can make the field more attractive to tech-savvy younger generations.

Addressing the mechanic shortage requires a multi-faceted approach involving improved recruitment, retention, training, and working conditions. The industry must also modernize its practices and appeal to younger workers to ensure long-term sustainability and growth.

THE ROLE OF FLIGHT SCHOOLS

Pilots wear the smiles of those they take on their first flights like medals, with the joy of these experiences leaving a lasting impression. These aviators, found at local airports, are key to revealing the often-hidden faces of the aviation community. They are invaluable resources for promoting the airport and the local aviation economy, often encouraging others to take the next step in their aviation journey by finding an instructor.

Central to the success of general aviation is the network of flight schools, which act as incubators for emerging pilots and bring life to many airports. The constant cycle of takeoffs and landings, ground school classes, and check rides create a dynamic environment that excites the local community. These flight schools attract students from various regions, with training programs lasting from a few weeks to several months, depending on the license or rating being pursued.

The FAA categorizes flight schools into Part 141 and Part 61. Part 141 schools have an approved curriculum and standardized process for student pilots aiming for licensure, often found in colleges offering aviation degrees. In contrast, Part 61 schools offer a more flexible, self-paced learning option, typically operated by independent flight schools. Both paths are viable for aspiring career aviators, with the choice between them often depending on cost and individual learning styles.

GENERAL AVIATION CHALLENGES

AVIATION: OTHER CHALLENGES

General aviation airports experience the same challenges faced by the industry as a whole. However, due to limited resources and revenue streams, smaller airports and their respective communities will experience larger consequences relative to larger airports. As we examine airspace congestion, infrastructure maintenance, new technologies, and aviation safety concerns, bear in mind that smaller airports bear the effects disproportionately.

Since the 1980s, general aviation aircraft manufacturers have slowed production thus requiring more maintenance on older aircraft. Additionally, the aviation industry loves nostalgia and this means more vintage aircraft flying. It is not uncommon to see planes regularly flying from the 1950 era. Regular maintenance ensures that an aircraft doesn't lose its airworthiness, and with avionics upgrades, planes experience a long shelf life.

To further keep planes in the air, the General Aviation Revitalization Act was passed in 1994 to counteract the effects of prolonged liability on aircraft manufacturers. This law limited the duration of liability on aircraft manufacturers on the aircraft it produced. After passage, aircraft manufacturers increased production, but the number of aircraft produced is still far less than in the glory days of the 1970s.

With the recent retirements and changes, aviation mechanics are in demand. There simply is not enough mechanics to maintain the older planes in aviation.

A community that sponsors an aviation maintenance program or shop will find an economic opportunity.



GENERAL AVIATION CHALLENGES

FINANCIAL FACTORS INFLUENCING PARTICIPATION IN THE AVIATION INDUSTRY

Declining interest in general aviation stems from a series of economic factors that have limited participation in general aviation. For example, insurance rates have risen steadily for everyone involved in aviation. Rates and restrictions for manufacturers, owners, operators, pilots, and mechanics have steadily increased in response to accidents and liability issues.

At the same time, tax credits for aircraft purchases have ended, making it more costly to enter the space.

Meanwhile, inflation and multiple recessions eroded discretionary spending.

COMMUNITY MEMBERS MAY FEAR AIRPORT EXPANSION

Currently, cities face urban sprawl, and communities must contend with the noise of airport traffic interfering with their desire for quiet neighborhoods. It is evident that people rely on aviation and desire its positive side, but communities must have a plan to address the unwanted challenges created by airport expansion.

STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

THE VIBRANT WORLD OF GENERAL AVIATION: PASSION, COMMUNITY, AND INNOVATION

General aviation, a cornerstone of the aviation industry, embodies the passion and community spirit of aviators worldwide. With over 340,000 general aviation aircraft globally and approximately 204,000 operated by U.S. pilots, this sector is vibrant and diverse. The journey into general aviation often begins with a spark of interest ignited by an introductory flight from a family friend or an event at the local airport. These initial experiences foster a lifelong love for flying, as evidenced by the stories and experiences shared by pilots at airports. The communal spirit of aviation is palpable, with pilots not only sharing their passion for flying but also the joy of introducing others to the skies.



STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

RELATIONSHIPS MATTER

Your local airport is full of passionate aviation enthusiasts, so the first step to promoting the airport involves building relationships with the men and women who make up the aviation community. Start by visiting the airport during the week and on the weekend to acquaint yourself with the people.

During the week, you may meet the instructors, mechanics, and airport managers. These are the regular pilots and aviators whose jobs depend on the aviation activity. On the weekend, you will most likely meet general aviation pilots who fly as a hobby or for travel. These pilots may be businesspeople who use their planes for business or pleasure travel. You will also meet the hobbyists who fly for fun and to enjoy the freedom of flight.

Listen to their stories and let their enthusiasm help build the foundation for the promotion of the airport.

Introduce the airport to the public, business owners, civic organizations, school districts, and elected officials. Help these groups understand the airport's value and build community acceptance and pride in it. Too often, communities overlook the benefits of the local airport, and many community members remain unaware of the importance of a thriving airport.

Contact the state legislators and congressional members after collecting the stories and building relationships with the aviation community. These elected officials need to understand the importance of your local airport and advocate for favorable aviation funding and policy. By contacting these individuals and keeping them apprised of your airport initiatives, they can alert you to funding opportunities and include your airport in infrastructure bills.

When communicating with state and congressional members, regularly send updates and establish relationships with these individuals. Proactive communication with these elected officials will pay dividends when a controversial issue arises or operating restrictions are raised. These elected officials need to be ready and willing to advocate for your airport if funding is threatened and to prevent an unexpected airport closure.

STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

ENGAGE & COLLABORATE WITH AVIATION ORGANIZATIONS

Appendix A contains a list of national aviation organizations. These organizations promote and expand aviation, and each has resources to help you promote your local airport.

The [Experimental Aircraft Association](#) is at the forefront of this list. EAA is well known for the annual AirVenture in Oshkosh, WI. This event brings the aviation community together every summer for a week of camping, airshows, and aviation product support and showcasing.

Alongside the EAA, a prominent aviation organization is the [Aircraft Owners and Pilot Association](#). Like the EAA, the AOPA advocates for favorable federal and state legislation to promote aviation. Both of these organizations provide excellent resources for understanding the most pressing issues.

Equally important, both the AOPA and EAA have invested considerable resources to help local communities inspire the next generation of pilots.

The EAA Young Eagles program sponsors free flying events at thousands of airports every year to introduce youth to the world of aviation.

Both organizations provide high-quality aviation curricula to high schools that wish to offer high school aviation classes. The aviation industry offers excellent career opportunities with competitive wages and exciting job opportunities.

STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

ENCOURAGE COMMUNITY PARTICIPATION AND EDUCATION

Your local airport is a valuable resource for your community—use it. If your airport has a local flight school, help promote its services. Connect the flight school with the local school district and help establish a high school aviation program.

Your flight school needs students, and aviation needs new pilots, air traffic controllers, mechanics, and administrators. Those future workers are sitting in class right now exploring career opportunities. If your school is not prepared to offer a high school curriculum, help them reach out to EAA or AOPA. These organizations have resources available to help the schools and offer scholarships for teachers and students.

Another possible educational opportunity is through the school's community education program. An aviation community education class offers adults the chance to explore aviation as a hobby or career.

As you connect your aviation community with the education community, make sure to participate in the flying. Take advantage of an introductory flight or volunteer at an aviation event.



STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

PROMOTE YOUR AIRPORT

Too often, communities struggle to promote local success stories. Your airport is a valuable resource and a great success story to promote. A successful marketing effort for your airport involves a robust media awareness campaign. Aviation stories invoke nostalgia and wonder in the readers. You will spark interest and curiosity by encouraging local and regional media to share the local aviation story.

Young kids love to fly in small airplanes, and parents enjoy watching their kids fly. For too long, aviation seemed unreachable to most people. That is not the case anymore.

Host a local aviation day and invite school tours of the airport. Climbing into the cockpit of an airplane is a memorable and rewarding experience that will last a lifetime. Reading the stories of professional pilots and famous aviators, one almost always finds that the passion for aviation started early in one's life.

The local city council and mayor play an important role in promoting the community's airport. These elected officials can proclaim an aviation day and help spread the word to the community. A community aviation day proclamation coupled with a fly-in event offers a big media opportunity and community participation event. Additionally, there is no cost for a proclamation, and the benefits are amazing.



STRATEGIES FOR MAXIMIZING THE IMPACT OF YOUR LOCAL AIRPORT

ESTABLISH A HIGH SCHOOL AVIATION PROGRAM

Like every industry, Aviation suffers from a workforce shortage. Mandatory retirements in aviation jobs have created a need for pilots, engineers, mechanics, and managers. The problem is real. If the United States wishes to continue robust transportation for people and goods, more young people will need to fill the job vacancies of today and tomorrow.

The students in high school classrooms will fill these future aviation positions today. It is imperative that aviation career exploration and training begin during the high school years.



CONCLUSION

Local airports are pivotal in fostering economic growth and community development. This whitepaper, "From Runways to Revenue: Economic Benefits of Your Local Airport," has illustrated the significant contributions of general aviation to the economy, generating billions in revenue and supporting millions of jobs. Airports are vital hubs for various services, from transportation and medical flights to agricultural applications and flight training.

Community engagement and proper management are crucial to unlocking the full potential of local airports. By dispelling misconceptions and promoting the diverse benefits of aviation, communities can harness the economic opportunities airports provide. The transition to unleaded aviation fuels, addressing labor shortages, and leveraging federal and state funding are essential to ensure the sustainability and growth of general aviation airports.

Case studies, such as Chicago's DuPage Airport's success and the creative use of rural airports facing closure, demonstrate the transformative impact of strategic airport management and community involvement. By fostering relationships, engaging with educational institutions, and advocating for supportive policies, local leaders can create a thriving aviation environment that benefits the entire community.

Ultimately, local airports are more than mere infrastructure; they are dynamic economic engines that, when nurtured and effectively managed, can drive substantial economic and social benefits. Embracing these opportunities will pave the way for prosperous and resilient communities, ready to take flight into a future of continued growth and development.

Contact us for information on how Golden Shovel Agency can help your community uncover the benefits of general aviation and leverage it to grow your economy.

TAKE THE NEXT STEP



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APPENDIX

APPENDIX A: AVIATION ORGANIZATIONS

[Federal Aviation Administration \(FAA\)](#)

[General Aviation Manufactures Association \(GAMA\)](#)

[Aircraft Owners and Pilots Association \(AOPA\)](#)

[Experimental Aircraft Association \(EAA\)](#)

[Cessna Owner Organization](#)

[National Association of Flight Instructors \(NAFI\)](#)

The [Aerospace Medical Association \(AsMA\)](#) is the largest professional membership organization in the fields of aviation, space, and environmental medicine.

[Aircraft Owners & Pilots Association \(AOPA\)](#) is the largest aviation association in the world.

[Air Marshal Association \(AMA\)](#) is the largest US professional association representing Federal Air Marshals.

[American Association of Airport Executives \(AAAE\)](#) is the largest professional organization for airport executives, representing thousands of management personnel at public-use airports.

[American Institute of Aeronautics and Astronautics \(AIAA\)](#) is the world's largest aerospace technical society, dedicated to advancing the global aerospace profession for engineers and scientists.

[Association for Unmanned Vehicle Systems International \(AUVSI\)](#) is devoted exclusively to advancing the unmanned systems and robotics community.

The [Association of Flight Attendants-CWA \(AFA\)](#) is the voice of flight attendants in the workplace and in the aviation industry.

[Experimental Aircraft Association \(EAA\)](#) is a membership organization for aviation enthusiasts dedicated to sharing the love of flying, building, and restoring recreational aircraft.

APPENDIX

The [Global Licensed Aircraft Dealer Association \(GLADA\)](#) is a membership-based organization that welcomes professionals in the business aviation industry.

The [National Agricultural Aviation Association \(NAAA\)](#) promotes aerial application benefits to the public and conducts programs and services to ensure the industry's continued success.

The <https://www.agaviation.org/> represents aviation safety professionals, including air traffic controllers, staff specialists, and traffic management coordinators.

The [National Association of Flight Instructors \(NAFI\)](#) is dedicated to raising and maintaining the professional standing of the flight instructor in the aviation community.

The [Professional Aviation Maintenance Association \(PAMA\)](#) is a membership organization dedicated to advocating for and representing aviation maintenance technicians.

[Society of Aviation and Flight Educators \(SAFE\)](#) is a member-centric organization that facilitates the professional development of aviation educators.

[Society of Experimental Test Pilots \(SETP\)](#) is a membership-based dedicated to aeronautical advancement by assisting in the professional development of experimental pilots.

[National Business Aviation Association \(NBAA\)](#) - Founded in 1947 and based in Washington, DC, the National Business Aviation Association (NBAA) is the leading organization for companies that rely on general aviation aircraft to help make their businesses more efficient, productive, and successful.

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